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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/529,117

03/24/2005

Nigel D. Young

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PHILIPS ELECTRONICS NORTH AMERICA CORPORATION
INTELLECTUAL PROPERTY & STANDARDS
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SAN JOSE, CA 95131

EXAMINER

WILCZEWSKI, MARY A

ART UNIT

PAPER NUMBER

2822

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/19/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

RD

Office Action Summary	Application No.	Applicant(s)	
	10/529,117	YOUNG ET AL.	
	Examiner	Art Unit	
	M. Wilczewski	2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14-18 and 20 is/are allowed.
- 6) ☒ Claim(s) 1,4,6,8,9,11-13 and 19 is/are rejected.
- 7) ☒ Claim(s) 2,3,7 and 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office action is in response to the Amendment filed on January 22, 2007.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4, 6, 8, 9, 11-13, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al., US Patent 6,881,615, in view of Wolf et al., *Silicon Processing for the VLSI Era, Volume 1-Process Technology*, pages 191-194.

Yamazaki et al. disclose a method of manufacturing a thin film transistor comprising a gate electrode 604, source and drain electrodes 608 and 609, a semiconductor layer 602 separated from the gate electrode by a gate insulator layer 603, see Figures 6(A)-6(C), the method comprising the steps of forming a semiconductor layer 602 over a substrate 601; forming a silicon nitride layer over the semiconductor layer, see EXAMPLE 3, column 11, lines 23-32; irradiating the silicon nitride layer with a laser, column 12, lines 10-20; and forming a gate electrode 604 and source and drain electrodes 608 and 609, see column 12, lines 58-60, column 13, lines 1-6, and column 14, lines 7-10. Yamazaki et al. do not expressly disclose that during the irradiation step part of the semiconductor layer is hydrogenated. However, the

irradiation step of Yamazaki et al. will hydrogenate the amorphous silicon layer because the silicon nitride layer formed on the amorphous silicon layer in the known method of Yamazaki et al. is formed by plasma CVD (PECVD). It is well known that silicon nitride layers formed by PECVD contain substantial amounts of atomic hydrogen (10-30%), see Wolf et al., pages 192-193. Hence, during the irradiation step, hydrogen from the silicon nitride layer will diffuse into the underlying amorphous silicon layer, thereby hydrogenating the amorphous silicon layer.

It is noted that claims 9 and 19 are product-by-process claims. Yamazaki et al. teach to thermally anneal the transistor in a hydrogen atmosphere, see column 13, line 60, and bridging column 14. This annealing step would inherently introduce hydrogen into the silicon oxide gate insulator layer. Alternately, it would have been obvious to the skilled artisan that the laser annealing step of Yamazaki et al. which was conducted at 100 °C for 30 minutes and then at 300 °C for an hour would have been sufficient to introduce hydrogen into the gate insulator layer. The previous laser annealing step during which the protective silicon nitride layer (column 12, lines 9-53) is present will hydrogenate the semiconductor layer, as pointed out above.

It has been well established that even though product-by-process claims are limited by and defined by the recited processing steps, determination of patentability is based on the product itself. Product-by-process claims are not limited to the manipulations of the recited processing steps, only the structure implied by the processing steps. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior

product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Once a reference teaching a product which appears to be substantially identical is made the basis of a rejection, and the Examiner presents evidence or reasoning tending to show inherency or obviousness, the burden shifts to the Applicant to show an unobvious difference.

It has been well established that the Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims than when a product is claimed in the conventional fashion. In re Fessmann, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). The PTO can require an applicant to prove that the prior art product does not necessarily or inherently possess the characteristics of his claimed product.

Allowable Subject Matter

Claims 14-18 and 20 are allowable over the prior art of record.

Claims 2, 3, 7, and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed January 22, 2007, have been fully considered but they are not persuasive. Applicant has argued that Yamazaki et al. fails to teach or suggest that the silicon nitride layer is irradiated by a laser beam. However, Yamazaki clearly teaches that the silicon nitride layer is present during the irradiation step, see column 12, lines 20-53. Removal of the silicon nitride layer is done after the laser annealing step, see lines 47-53 of column 12. Hence, as argued above, the irradiation step of Yamazaki et al. will cause hydrogen to outdiffuse from the silicon nitride into the amorphous silicon layer to hydrogenate the amorphous silicon layer. Therefore, it is maintained that during the irradiation step, hydrogen from the silicon nitride layer will diffuse into the underlying amorphous silicon layer, thereby hydrogenating the amorphous silicon layer.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Wilczewski whose telephone number is (571) 272-1849. The examiner can normally be reached on Monday and Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



M. Wilczewski

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Primary Examiner
Tech Center 2800